It's All Connected

Activity 12: Storm Drain Stenciling

Storm drains were designed to be the fastest and most efficient way of getting rainwater off streets and parking lots. Unfortunately, the water that flows into your storm drain carries trash and sediment from the street, nutrients in the form of fertilizers, toxics in the form of pesticides, household cleaners, gasoline and motor oil. All of the water in the storm drains ends up in your local stream, river and eventually, the Chesapeake Bay.

When scheduling your storm drain stenciling, consider weather conditions. Storm drain surfaces must be perfectly dry and air temperature must be at least 50 degrees fahrenheit. Because spray paint cannot be used in very windy weather, you can use a small roller and paint.

Vocabulary

Discharge Point – the place where the water traveling from storm drains in underground pipes empties into a stream

Outfall – same as discharge point

Stencils - A sheet of plastic that has lettering cut out so that when you paint the sheet, the lettering will reproduce on the surface beneath

Storm Drain - A storm drain is designed to prevent flooding by safely carrying rainwater to streams, creeks, the bay and the ocean

Watershed – an area of land that is drained by a river or other body of water

Goal

- ❖ Complete a project that will make citizens aware that their actions affect the streams and the Chesapeake Bay.

Voluntary State Curriculum

1.0 Skill and Processes
- A Scientific Inquiry: 1
- C Application of Science: 2

6.0 Environmental Science
- C Natural Resources & Human Needs: 1

Time 2 hours

Materials

- ✓ Map of area
- ✓ Stencils for each team
- ✓ Light colored water based latex paint (1 quart for 20 drains) for the background

- ✓ Green water based latex paint (1 can for 6 drains).
- ✓ Water (for brush clean up)
- ✓ Drop cloth
- ✓ Masking tape
- ✓ Wire brushes and hand brooms
- ✓ Screwdriver (to open cans)
- ✓ Paint stirrers (1 per team)
- ✓ "Wet Paint" Signs
- ✓ 3" paint brushes
- ✓ Trash bags (1 per team)
- ✓ Traffic Cone

Motivation

❖ Read "It's all Connected".

Procedure

1. *Locate a storm drain near your school.* Look for storm drains in your school parking lot and/or along the streets that surround your school. Consider contacting your Department of Public Works for a map of the storm drain system in your area to find out where the storm drain system empties.

2. ***Get permission***. If you are planning to stencil storm drains on school grounds, you will need to get permission from your principal. For all other sites, contact your local Department of Public Works for permission. You may need to obtain a permit, so contact them several weeks prior to the date you want to begin. Be prepared to provide the following information:

   - ✓ The location of the storm drain(s) you wish to stencil;
   - ✓ What you plan to stencil onto the storm drain: "Don't Dump!" on the horizontal side, "Chesapeake Bay Drainage" on the vertical side; and
   - ✓ Who will provide supervision for the project?

3. ***Purchase or borrow supplies.*** Some of the materials required for this project (paint brushes, masking tape, etc.) can probably be borrowed from your home. Ask people in the community, local businesses, or organizations to donate supplies or money for the supplies. This is your chance to get people in the community involved and educate them about the storm drain issue. Storm drain stencils can be borrowed from the Maryland Department of Natural Resources. For more information, visit the DNR web page (http://www.dnr.maryland.gov/education/are/stormdrain.html) to download a Storm Drain Stencil Form.

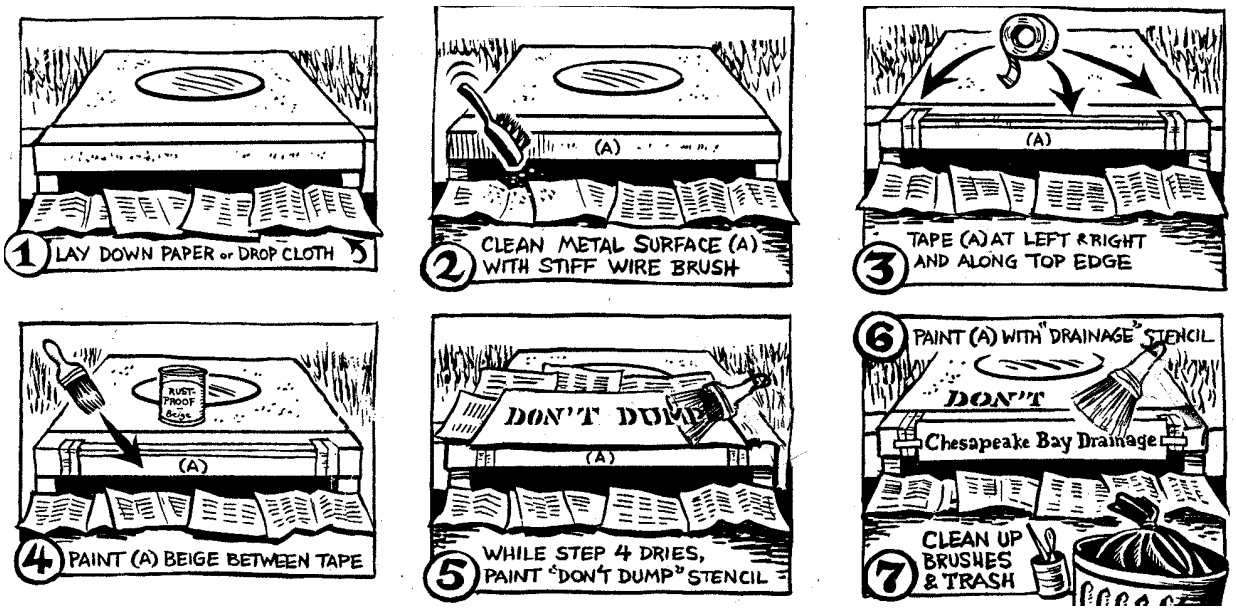
4. ***Publicize.*** Contact the news media (radio and television stations) at least two weeks in advance and provide them with details about the project (time, location, and contact names). Remind the media of the event a day or two before. If possible, announce the project over the school's PA system. In addition, distribute flyers to residents who live near the storm drains to be stenciled.

   Your flyer should include:

   - ✓ the date and time;
   - ✓ the purpose of the event;
   - ✓ the exact location of the drains to be painted;
   - ✓ a person to contact with questions or concerns, and
   - ✓ a request to move cars blocking designated storm drains on the day of the event.

5. *Safety first!* Since drivers may not see you standing or kneeling near parked cars, plan to have an adult hold a traffic flag and alert oncoming cars. If your storm drain stenciling is on a very busy street, arrange for police to direct traffic. Call your local police station several weeks in advance to ask for help.

6. *Practice.* Use a flat paper bag to do a practice run with the stencil. Remember, less is more with paint- if applied too thick it will "run" under the stencil. *Dab* the paint into the stencil, to get into the crevices of the surface you are stenciling.



7. The pavement must be dry for the paint to stick. In addition, the paint will not dry well if it is colder than 50° F. If it is raining cancel the project and choose an alternative date instead.

8. Place traffic cones 2-3 feet in front of the storm drain and clean up any debris on or around the storm drain. Be sure to wear protective gloves and put all debris found in a trash bag. Separate any recyclable materials from regular trash. Use a wire brush to remove rust if you will be stenciling any metal part of the storm drain. Place the drop cloth in front of the drain to prevent any of your materials from falling into the storm drain.

9. Center the "Don't Dump!" stencil on the horizontal (top) face of the storm drain, and the "Chesapeake Bay Drainage" stencil on the vertical (bottom) face. Outline the stencils with masking tape to create a straight, rectangular border on the areas you are painting. Set the stencils aside, leaving the rectangular borders.

10. Paint inside the rectangular borders with white or beige paint. Wait 15-30 minutes, or until paint is dry to the touch.

11. Once again, center the "Don't Dump!" stencil on the horizontal surface and the "Chesapeake Bay Drainage" stencil on the vertical surface. Tape both stencils into place.

12. As one or two students apply paint to the letters, other students can help them, by holding the stencil flat and firmly in place. Be careful not to use too much paint or it will run and smear! Generally, if you are using the right amount of paint, you will need to "reload" your brush with paint every two letters. When you are finished stenciling all of the letters, lift the stencils off carefully so that you don't smudge the wet paint. Remove the masking tape borders.

13. Clean up the stenciling site. Use paper towels to wipe any excess paint from the stencil. Place any paint brush used in a plastic bag while you go to the next stenciling site. Tape a "Wet Paint!" sign next to drain. Clean your bushes thoroughly with water and dry them with newspaper. If you have used a water-based latex paint, you will be able to rinse brushes and containers in a bathroom sink.

Optional Challenges/Extensions

- Journal – reflect on the project. What went well? What didn't? How would you change the project if you were to do it again? What were the benefits of the project – to the community, the environment and you?
- Monitor trash around storm drain one-week prior to and one week following stenciling. Assess whether the project has made a difference in the amount of trash that enters the storm drain.
- Design another stencil or sticker that you could use in a similar way to encourage people to help the environment by changing their behavior.
- Extend the project to cross-aged teaching experience. Teach older and younger people in the community why it is important to stencil storm drains.

Wrap Up

- Mark on the map where drains are painted; use a different marking to show the locations of drains you would like to stencil in the future.

- Discuss the impact of the storm drain painting that was done. Check the stream in future months to see if pollution has decreased.

Assessment

- Participation in the project

Tips for Clean Up

- Put non-hazardous trash in trash bag.

- Clean brushes.

- Give away leftover paint or pour kitty litter into the can of paint, let dry, and dispose in the regular trash.

- To get rid of hazardous materials (paint thinner, mineral spirits, non-latex paint) call the local Solid Waste, Public Works or Environmental Health Office.

It's All Connected!

Have you ever watched rainwater rushing over the ground during a storm? It travels very quickly. Lots of water runs together from different areas. It sweeps along everything in its path. Streams of water pour into the nearest storm drain. After it disappears inside the storm drain, where does the water go?

The rain you see racing into your neighborhood storm drain goes into concrete pipes. Then it is carried to a discharge point or outfall, usually located on a stream. The stream joins other streams. The streams flow into rivers. The rivers empty into the Chesapeake Bay. You can see how the storm drain in your neighborhood is a connection between your community, the streams and the Bay. Anything that goes into a storm drain will end up in a stream or river or the Bay.

A lot of people don't know this. They think a storm drain is like a big dumpster. They throw trash and toxic substances into the drain. Maybe you've thrown a wrapper into a storm drain thinking it was okay.

Any substance that is dumped or poured on pavement or hard surface can be washed into a storm drain by rainwater. That's why people should not drain oil or other fluids from cars onto a driveway or street. A good thing to do is to always ask yourself this question before spilling or pouring something on the ground: "Would this be safe to put in a fish aquarium?" If the answer is "No", then you shouldn't place it on a paved surface.

Educating people about the connection of storm drains to our community waterways and the Bay is a very important way to help restore our streams.

Storm Drain Stenciling

An easy way to teach people that storm drains should not be used as trash cans is to stencil a message right on the storm drain

WHAT YOU WILL NEED

- ☐ Stencils
- ☐ 3" Paint brushes
- ☐ Container for cleanup
- ☐ Mineral spirits/paint thinner
- ☐ Light colored water based latex paint
- ☐ Green water based latex paint
- ☐ Map of area
- ☐ Water (for brush clean up)
- ☐ Drop cloth
- ☐ Masking tape
- ☐ Wire brushes and hand brooms
- ☐ Screwdriver (to open cans)
- ☐ Paint stirrer
- ☐ Wet Paint" Signs
- ☐ Trash bag
- ☐ Traffic Cone

KNOW THE MEANING…

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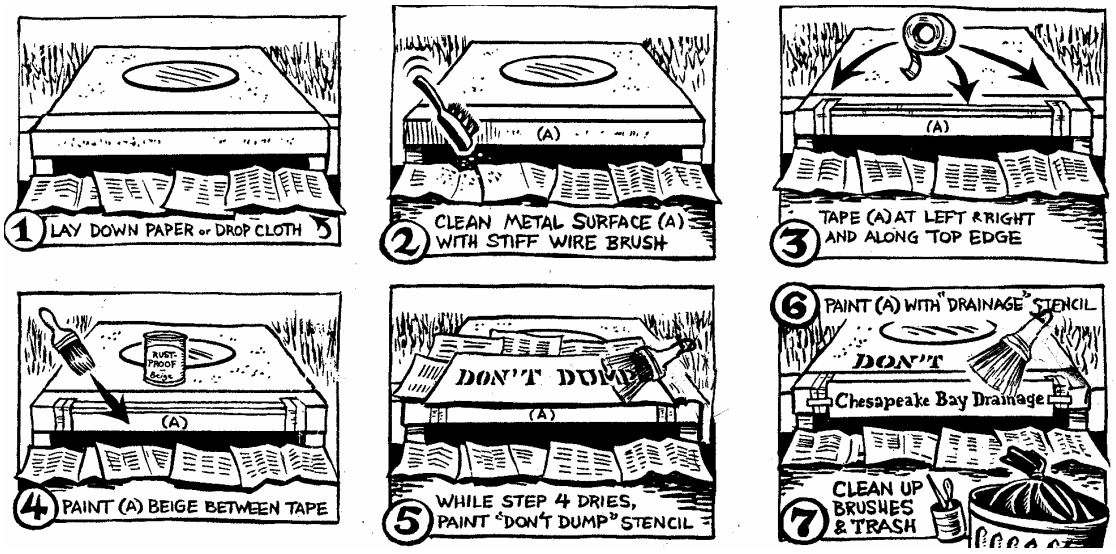
Storm Drain - A storm drain is designed to prevent flooding by safely carrying rainwater to streams, rivers, creeks, the bay and the ocean.

Watershed – an area of land that is drained by a river or other body of water

WHAT TO DO



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